Shayan Chowdhury

AI, Public Health Policy, Social Entrepreneurship   LinkedIn: shayanhchowdhury   Website: shayan.tech   Email: sc4040@columbia.edu

EDUCATION: [Columbia University, NY](): **BA in Info/Computer Science & Public Policy**   **GPA: 3.98, Dean's List, Exp Grad: 2025**

Relevant Coursework: Applied Data Science, Advanced Machine Learning Projects, Computer Applications in Health Care & Biomedicine, Artificial Intelligence, LLM Foundations and Ethics, Environmental Data Analysis, Intro to Human Rights

High School: Stuyvesant High School, New York, NY

RESEARCH EXPERIENCE

Research Trainee, [Artificial Intelligence in Medicine Program, Harvard Medical School, Boston, MA]()   **January 2024 – present**

- **Building AI models** for risk assessment and triage in diseases like cancer, aimed at informing public health policy and reducing the burden on healthcare systems, **advised by Dr. Danielle Bitterman** under the Radiation Oncology department
- **Leading development of custom NLP methods**, such as adapting the preference optimization algorithm ORPO to enhance the quality of synthetic medical data, improving the fine-tuning of medical AI models and optimizing their applicability in clinical settings
- **Authoring a paper** on how **medical LLMs fine-tuned on synthetic patient data outperform** those trained on gold-labeled data

Researcher, [Department of Computer Science, Columbia University, New York]()   **September 2023 – present**

- **Developing and applying machine learning (ML) classifiers** to **identify hotspots of foodborne illness** outbreaks in restaurants, enhancing the ability to predict and prevent future outbreaks, **advised by Prof. Luis Gravano**
- **Collaborating closely with the NYC Department of Health and Mental Hygiene (DOHMH)** to **translate research findings into actionable insights**, directly influencing public health policies and improving community health outcomes
- **Second authored paper** on findings presented at the **2024 International Conference on Social Media & Society** in **London, UK**

Director of Mentorship & Education, [CoVisualize, Harvard University, Cambridge, MA]()   **October 2022 – present**

- **Mentoring students** on research, data analysis, AI, and technical writing + **connecting 200+ students to PIs** at Columbia, Harvard, etc.

Research Technician, [Fifer Lab, Columbia University Irving Medical Center, New York]()   **August 2021 – September 2023**

- **Developed adaptions to improve access to low-cost technologies** for **preventing fetal miscarriages and stillbirths**, with a focus on **low- and middle-income countries (LMICs)** like India and South Africa and their local healthcare settings
- **Built self-supervised ML models** w/ TensorFlow for **real-time clinical analysis** of fetal + maternal electrocardiogram (ECG) data
- **Developed and published on a signal processing algorithm** to analyze fetal ECG signals for high-risk diabetes patients, resulting in **enhanced monitoring** and **early intervention** to prevent the onset of neurodevelopmental disorders in newborns *(see publications below)*

Lead Data Analyst, [a2i Programme, ICT Ministry / Cabinet Division / UNDP Bangladesh]()   **March 2020 – January 2022**

- **Appointed** to the National COVID-19 Policy Dashboard Committee of the Bangladesh Government for the **Ministries of Health and IT**
- **Led development on COVID-19 data pipelines** from syndromic surveillance via national call centers to near-real-time info from hospitals
- **Developed statistical models** to predict spread and **inform public policy** on lockdowns, public health comms and healthcare decisions
- **Analyzed data** on tests, cases, deaths, hospitalizations, and mobility, and **led presentations on policy recommendations** to the Directorate General of Health Services, Institute of Epidemiology, and **up to the Prime Minister**, alongside epidemiologists, researchers, and statisticians from Harvard, MIT, Columbia and UC Berkeley + **published several papers** on disease dynamics and response *(see below)*

Research Intern, [Frank Lab: Nobel Laureate Joachim Frank, Columbia University, New York]()   **September 2018 – November 2019**

- **Achieved the highest resolution 3D reconstruction** of the 40S eukaryotic ribosome subunit (at 1.5 Å ≈ 0.15 nanometers) to reverse engineer the mechanism of protein synthesis and uncover how errors in cell growth and division can lead to cancer
- **Fine-tuned bioinformatics tools** to increase the accuracy of protein detection and reconstruction in noisy electron microscope images

Machine Learning Project Lead, [Google Mentorship Program, Google, New York]()   **October 2018 – June 2019**

- **Led a Stuyvesant HS team** to develop a **LSTM-based ML model** w/ PyTorch capable of **understanding human emotions from voice intonations** for use in digital personal assistants, medical applications, and **improving accessibility for those with speech disabilities**

SELECTED RESEARCH PUBLICATIONS [(GOOGLE SCHOLAR)]()

- **Chowdhury S.,** Frasch M. G, Wu H., Lucchini M., Shuffrey L. C., Sania A., Malette C., Odendaal H. J., Myers M. M., Fifer W. P, Pini N. (2022). [A Novel Method for the Extraction of Fetal ECG Signals from Wearable Devices](). *44th Int'l IEEE* Engineering in *Medicine & Bio Conf. (EMBC)*.
- Mahmud, A. S., **Chowdhury, S.**, Sojib, K. H., Chowdhury, A., Quader, M. T., Paul, S., ... & Buckee, C. O. (2021). [Participatory syndromic surveillance as a tool for tracking COVID-19 in Bangladesh](). *Epidemics*, 35, 100462.
- Chadwick, F., Clark, J., **Chowdhury, S.**, ... & Sania, A. (2022). [Combining Rapid Antigen Testing and Syndromic Surveillance Improves Sensitivity and Specificity of COVID-19 Detection: A Community-Based Prospective Diagnostic Study](). *Nature Communications*, 13, 2877.
- Ferguson E. A., Brum, E., Chowdhury, A., **Chowdhury, S.**, Kundegorski, M., ... & Hampson, K. (2022). [Modelling how face masks and symptoms-based quarantine synergistically and cost-effectively reduce SARS-CoV-2 transmission in Bangladesh](). *Epidemics*, 40, 100592.
- Sania, A., Mahmud, A. S., Alschuler, D. M., Urmi, T., **Chowdhury, S.**, Lee, S., Mostari, S., Shaikh, F. Z, ... & Arifeen, S. E. (2023). [Risk factors for COVID-19 mortality among Telehealth patients in Bangladesh: A prospective cohort study.]() *PLOS Global Public Health*, 3(6), e0001971.

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ENTREPRENEURIAL EXPERIENCE

Executive Director & Founder, [Reach4Help](#), Montréal, Canada   **March 2020 – present**

- **Leading a team of 30+** in coordinating **humanitarian aid logistics for disaster response in over 38 countries**, working closely with UN agencies, governments, and civil society organizations to ensure that aid reaches remote, vulnerable, and hard-to-access areas
- Developed an open-source [**global map of aid**](#), serving as the backbone for logistical coordination of volunteer help for **over 10,000 organizations** through the COVID-19 pandemic worldwide, earthquakes in Mexico, wildfires in California/US West Coast, invasion of Ukraine, floods/cyclones in Bangladesh/Pakistan, earthquakes in Türkiye/Syria, etc.
- **Raised $120K** from Google for Nonprofits and **secured $106K** in in-kind donations from Google, Slack, Algolia, etc.
- **Helped raise €170K+** for medical relief and civilian defense in Ukraine + **provided aid for 58K+ households** during floods in Bangladesh, Pakistan, and India, partnering with the World Economic Forum and NGOs such as BRAC, Kandari, etc.

Global Shaper, Curator & Climate Reality Leader, [World Economic Forum, Geneva, Switzerland](#)   **August 2021 – present**

- **Selected as the youngest Global Shaper** by the World Economic Forum for work on Reach4Help
- **Led [SupportUkraineNow](#) projects** as U.S. co-ambassador, reaching **1M+ Ukrainians** on refugee aid, fundraising and mental health support
- **Awarded a grant from Al Gore's Climate Reality Project** to scale **education policy solutions**, impacting **1800+ students** in Bangladesh by spearheading climate action and education initiatives through the Dhaka Hub, including **plastic recycling, tree planting, and climate education workshops**, with efforts to expand these initiatives in New York
- **Elected to be Curator of the New York City Queens Hub** for global representation and local leadership on hub projects, focusing on **youth education empowerment**, partnering with local NGOs and tech companies like Google to equip the underserved and rich immigrant communities of Queens with **skills for tech and policy engagement**

Software Developer, [Migrant Nation Foundation, The Netherlands / UNDP Bangladesh](#)   **October 2019 – June 2020**

- **Developed an e-commerce marketplace** for **11K+ Rohingya refugees** in Bangladesh, enabling them to **earn a living wage** and **achieve financial independence** by producing and selling products to consumers worldwide on Amazon, Alibaba, and other international markets
- **Lived and worked in the camps** with several United Nations agencies including UN Development Programme (UNDP), UN High Commissioner for Refugees (UNHCR), and the World Food Programme (WFP)
- **Built a mobile app to pay refugees hourly wages** in accordance with the International Labour Organization's decent work practices

HONORS & AWARDS

- NYC Queens Hub Curator, Global Shapers, World Economic Forum   **2024**
- Future Climate Leader, The Aspen Institute   **2023**
- Climate Reality Corp Leadership Award, awarded by former U.S. Vice President Al Gore   **2022**
- Dean's List (All Semesters), Columbia University   **2022–**
- Distinguished New Student Scholarship, Columbia University   **2022**
- Daniel Bergstein Memorial Scholarship, Columbia University   **2019**
- AP Scholar w/ Distinction, College Board   **2019**
- Finalist, The Gates Scholarship   **2019**
- Elizabeth Piper Scholarship, Columbia University Double Discovery Center   **2018**
- Stand Up to Cancer Award for Lung Cancer Research, New York Genome Center & Weill Cornell Medical College   **2017**

SPEAKING ENGAGEMENTS, EVENTS & PRESS COVERAGE

- Curator, [**Global Shapers Annual Summit 2024**](#) organized by the **World Economic Forum** in **Geneva, Switzerland**   **July 2024**
- Panelist, [**"Bringing Health and Equity into Climate Action"**](#) organized by **Accenture** and **World Economic Forum** in **New York**   **Sep 2023**
- Speaker, [**Princeton University's Youth Climate & Conservation Summit (YCCS)**](#) in **Princeton, New Jersey** on climate finance   **Apr 2023**
- Speaker, [**The Aspen Institute's Future Leaders Climate Summit**](#) in **Miami, Florida** on climate public policy leadership   **Mar 2023**
- Lead presenter and author, [**International Society for Developmental Psychobiology (ISDP) Conference**](#) in **San Diego, California**   **Nov 2022**
- Presenter, [**"The Roadmap to Resources: How Reach4Help Leads People in Need"**](#) at **Google HQ** in **Mountain View, California**   **Oct 2022**
- Speaker, [**International Youth Conference**](#) on entrepreneurship and public policy advocacy in **Cambridge, Massachusetts**   **Sep 2022**
- Speaker, [**Climate Changemakers Digital Innovation for Youth Conference**](#) at the **United Nations Headquarters** in **New York**   **Sep 2022**
- Lead presenter and first author, [**44th Int'l IEEE Engineering in Medicine & Biology Conference**](#) (EMBC) in **Glasgow, Scotland**   **Jul 2022**
- Exclusive feature in [**The Daily Star**](#), the most widely circulated English newspaper in **Bangladesh**   **Mar 2022**

PROGRAMMING LANGUAGES: Python, R, JavaScript/TypeScript, MATLAB, Java, C++, Rust, Dart, SQL
SPOKEN LANGUAGES: Bangla (native), Spanish, Latin, Mandarin Chinese (int.)